

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application

Inventors: Shek Fai Lau, et al.

Appl. No.: Unknown

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Title: ELECTRODE SELF-CLEANING MECHANISM FOR
ELECTRO-KINETIC AIR TRANSPORTER
CONDITIONER DEVICES

PATENT APPLICATION

Art Unit: Unknown

Examiner: Unknown

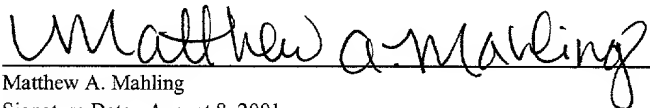
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Matthew A. Mahling

Signature Date: August 8, 2001

PRELIMINARY AMENDMENT

Box PATENT APPLICATION

Commissioner for Patents

Washington, D.C. 20231

Sir:

Prior to examination of the application, please amend the above-identified application as follows.

In the Claims:

Please cancel claims 1-20. Please add new claims 29 - 63. All pending claims are reproduced below, including those that remain unchanged.

1. (Cancel)

2. (Cancel)

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21. A method for cleaning a wire-like electrode in an electro-kinetic transporter-conditioner of the type having a housing in which are disposed a first electrode array including at least one wire-like electrode, and a second electrode array, removably disposed in said housing, having a base member and

including at least two electrodes disposed substantially parallel to said wire-like electrode in said first electrode array, said wire-like electrode in said first electrode array being equidistant from said two electrodes in said second electrode array, and a source of high voltage outputting a signal whose duty cycle may be varied from about 10% to about 100%, disposed in said housing, coupled between said first electrode array and said second electrode array;

the method including the following steps:

disposing within said housing a mechanism to frictionally clean said wire-like electrode when at least one of the follow actions occurs:

said base member of said second electrode array is moved; or

said transporter-conditioner is turned upside down and rightside up.

22. The method of claim 21, wherein disposing said mechanism includes attaching a first end of a strip of flexible high voltage tolerant material to said base, a second end of said strip defining a slit sized to frictionally engage said wire-like electrode, said strip extending toward and beyond said wire-like electrode;

wherein said strip is disposed such that when said second electrode array is inserted in said housing said wire-like electrode fits within said slit;

wherein movement of said strip frictionally cleans an outer surface of said wire-like electrode.

23. The method of claim 21, further including:

urging said second end of strip upward and away from said wire-like electrode when said second array is fully inserted in said housing.

24. The method of claim 23, wherein urging includes disposing a vane projecting from an interior region of said housing such that a distal end of said vane contacts said strip and urges said second end upward and away from said wire-like electrode.

25. The method of claim 21, wherein disposing said mechanism includes pivotally and biasedly attaching a first end of an arm to said base, and attaching to a second end of said arm a strip of flexible high voltage tolerant material whose distal end defines a slit sized to frictionally engage said wire-like electrode, said strip extending toward and beyond said wire-like electrode;

wherein said strip is disposed such that when said second electrode array is inserted in said housing said wire-like electrode fits within said slit;

wherein movement of said strip frictionally cleans an outer surface of said wire-like electrode.

26. The method of claim 21, wherein disposing said mechanism includes providing a bead-like member having a through opening through which said wire-like electrode passes;

wherein when said transporter-conditioner is inverted, said bead-like member moves along a length of said wire-like member and frictionally cleans an outer surface of said wire-like member.

27. The method of claim 26, further including forming said through opening with a characteristic selected from a group consisting of (a) said through opening is formed through a geometric center of said bead-like member, (b) said through opening is formed parallel to but offset from a longitudinal axis of said bead-like member, (c) said through opening is formed offset from at inclined relative to a longitudinal axis of said bead-like member, (d) a cross-section of said through opening is circular, and (e) a cross-section of said through opening is non-circular.

28. The method of claim 26, wherein a bottom end of said wire-like electrode is retained in a pylon; and

disposing said mechanism includes providing a bell-shaped bead-like member having a through-opening through which said wire-like member passed;

wherein when in a bottommost position along said wire-like electrode, an air gap exists between an outer surface of said wire-like electrode and an inner surface of said bead-like member.

29. (New) A method for cleaning a first group of electrodes contained within an electro-kinetic air conditioner, wherein a second group of electrodes within the air conditioner has a cleaning device fastened with the second group of electrodes, which also engage the first group of electrodes, the method comprising, in any order, the steps of:

(a) removing the second group of electrodes from the electro-kinetic air conditioner;

and

(b) replacing the second group of electrodes back into the electro-kinetic air conditioner.

30. (New) A method as recited in Claim 29, wherein removing the second group of electrodes from the electro-kinetic air conditioner in step (a) causes the cleaning device to travel along the first group of electrodes and frictionally remove contaminants from the outer surface of the first group of electrodes.

31. (New) A method as recited in Claim 29, wherein replacing the second group of electrodes back into the electro-kinetic air conditioner in step (b) deflects the cleaning device away from the first group of electrodes such that the cleaning device does not contact the first group of electrodes when the second group of electrodes are completely placed back into the electro-kinetic air conditioner.

32. (New) A method for cleaning a first group of electrodes contained within an electro-kinetic air conditioner, wherein the first group of electrodes has at least one electrode with a cleaning device connected with the electrode, such that the cleaning device can travel along the length of the electrode, the method comprising:

(a) rotating the electro-kinetic air conditioner from an original position so that the cleaning device travels from an initial position along the electrode and frictionally removes contaminants from the outer surface of the electrode;

(b) returning the electro-kinetic air conditioner to the original position, so that the cleaning device returns to the initial position; and

(c) repeating steps (a) and (b) when the accumulation of contaminants on the electrode require subsequent cleaning to maintain the efficiency of the air conditioner.

33. (New) The method as recited in Claim 32, wherein the cleaning device is a bead-like member.

34. (New) The method as recited in claim 33, wherein the cleaning device has a bore to allow the electrode to pass through with a characteristic selected from a group consisting of (a) a bore formed through a geometric center of the bead-like member, (b) a bore formed parallel to, but offset from, a longitudinal axis of the bead-like member, (c) a bore formed at an inclined relative to a longitudinal axis of the bead-like member.

35. (New) The method as recited in Claim 34, wherein the cleaning device is spherically shaped.

36. (New) A method according to Claim 34, wherein the cleaning device is cylindrically shaped.

37. (New) A method according to Claim 34, wherein the cleaning device is bell shaped.

38. (New) A method for cleaning a first electrode contained within an electro-kinetic air conditioner, wherein a second electrode within the air conditioner has a cleansing device fastened with the second electrode, which also engage the first electrode, the method comprising, in any order, the steps of:

- (a) removing the second electrode from the electro-kinetic air conditioner; and
- (b) replacing the second electrode back into the electro-kinetic air conditioner.

39. (New) A method as recited in Claim 38, wherein removing the second electrode from the electro-kinetic air conditioner in step (a) causes the cleansing device to travel along the first electrode and frictionally remove contaminants from the outer surface of the first electrode.

40. (New) A method as recited in Claim 38, wherein replacing the second electrode back into the electro-kinetic air conditioner in step (b) deflects the cleaning device away from the first electrode such that the cleaning device does not contact the first electrode when the second electrode is completely placed back into the electro-kinetic air conditioner.

41. (New) A method for cleaning an electrode contained within an electro-kinetic air conditioner, wherein the first electrode has a cleaning device connected with the electrode, such that the cleaning device can travel along the length of the electrode, the method comprising:

- (a) rotating the electro-kinetic air conditioner from an original position so that the cleaning device travels along the electrode and frictionally removes contaminants from the outer surface of the electrode;

- (b) returning the electro-kinetic air conditioner to the original position; and
- (c) repeating steps (a) and (b) when the accumulation of contaminants on the electrode

require subsequent cleaning to maintain the efficiency of the air conditioner.

42. (New) The method as recited in Claim 41, wherein the cleaning device is a bead-like member.

43. (New) The method as recited in claim 42, wherein the cleaning device has a bore to allow the electrode to pass through with a characteristic selected from a group consisting of (a) a bore formed through a geometric center of the bead-like member, (b) a bore formed parallel to, but offset from, a longitudinal axis of the bead-like member, (c) a bore formed at an inclined relative to a longitudinal axis of the bead-like member.

44. (New) The method as recited in Claim 43, wherein the cleaning device is spherically shaped.

45. (New) A method according to Claim 43, wherein the cleaning device is cylindrically shaped.

46. (New) A method according to Claim 43, wherein the cleaning device is bell shaped.

47. (New) A method for cleaning a wire-like electrode in an electro-kinetic transporter-conditioner of the type having a housing in which are disposed a first electrode, and a second electrode, removably disposed in said housing, having a base member, and a source of high voltage coupled between said first electrode and said second electrode;

the method including the following steps:

disposing within said housing a mechanism to frictionally clean said first electrode when at least one of the follow actions occurs:

said base member of said second electrode is moved; or

said transporter-conditioner is turned upside down and rightside up.

48. (New) The method of claim 47, wherein disposing said mechanism includes attaching a first end of a strip of flexible high voltage tolerant material to said base, a second end of said strip defining a slit sized to frictionally engage said first electrode, said strip extending toward and beyond said first electrode;

wherein said strip is disposed such that when said second electrode is inserted in said housing said first electrode fits within said slit;

wherein movement of said strip frictionally cleans an outer surface of said first electrode.

49. (New) The method of claim 47, further including:

urging said second end of strip upward and away from said first electrode when said second electrode is fully inserted in said housing.

50. (New) The method of claim 49, wherein urging includes disposing a vane projecting from an interior region of said housing such that a distal end of said vane contacts said strip and urges said second end upward and away from said first electrode.

51. (New) The method of claim 47, wherein disposing said mechanism includes pivotally and biasedly attaching a first end of an arm to said base, and attaching to a second end of said arm a strip of flexible high voltage tolerant material whose distal end defines a slit sized to frictionally engage said first electrode, said strip extending toward and beyond said first electrode;

wherein said strip is disposed such that when said second electrode is inserted in said housing said first electrode fits within said slit;

wherein movement of said strip frictionally cleans an outer surface of said first electrode.

52. (New) The method of claim 47, wherein disposing said mechanism includes providing a bead-like member having a through opening through which said first electrode passes;

wherein when said transporter-conditioner is inverted, said bead-like member moves along a length of said first member and frictionally cleans an outer surface of said first electrode.

53. (New) The method of claim 52, further including forming said through opening with a characteristic selected from a group consisting of (a) said through opening is formed through a geometric center of said bead-like member, (b) said through opening is formed parallel to but offset from a longitudinal axis of said bead-like member, (c) said through opening is formed offset from at inclined relative to a

longitudinal axis of said bead-like member, (d) a cross-section of said through opening is circular, and (e) a cross-section of said through opening is non-circular.

54. (New) The method of claim 52, wherein a bottom end of said first electrode is retained in a pylon; and

disposing said mechanism includes providing a bell-shaped bead-like member having a through-opening through which said first electrode passed;

wherein when in a bottommost position along said first electrode, an air gap exists between an outer surface of said first electrode and an inner surface of said bead-like member.

55. (New) A method for cleaning a first electrode contained within an electro-kinetic air conditioner, wherein a second electrode within the air conditioner has a cleaning device fastened with the second electrode, which also engages the first electrode, the method comprising, in any order, the steps of:

- (a) removing the second electrode from the electro-kinetic air conditioner; and
- (b) replacing the second electrode back into the electro-kinetic air conditioner.

56. (New) A method as recited in Claim 55, wherein removing the second electrode from the electro-kinetic air conditioner in step (a) causes the cleaning device to travel along the first electrode and frictionally remove contaminants from the outer surface of the first electrode.

57. (New) A method as recited in Claim 55, wherein replacing the second electrode back into the electro-kinetic air conditioner in step (b) deflects the cleaning device away from the first electrode such that the cleaning device does not contact the first electrode when the second electrode is completely placed back into the electro-kinetic air conditioner.

58. (New) A method for cleaning a first electrode contained within an electro-kinetic air conditioner, wherein the first electrode has a cleaning device connected with the first electrode, such that the cleaning device can travel along the length of the first electrode, the method comprising:

(a) rotating the electro-kinetic air conditioner from an original position so that the cleaning device travels from an initial position along the first electrode and frictionally removes contaminants from the outer surface of the first electrode;

(b) returning the electro-kinetic air conditioner to the original position, so that the cleaning device returns to the initial position; and

(c) repeating steps (a) and (b) when the accumulation of contaminants on the first electrode require subsequent cleaning to maintain the efficiency of the air conditioner.

59. (New) The method as recited in Claim 58, wherein the cleaning device is a bead-like member.

60. (New) The method as recited in claim 59, wherein the cleaning device has a bore to allow the first electrode to pass through with a characteristic selected from a group consisting of (a) a bore

formed through a geometric center of the bead-like member, (b) a bore formed parallel to, but offset from, a longitudinal axis of the bead-like member, (c) a bore formed at an inclined relative to a longitudinal axis of the bead-like member.

61. (New) The method as recited in Claim 60, wherein the cleaning device is spherically shaped.

62. (New) A method according to Claim 60, wherein the cleaning device is cylindrically shaped.

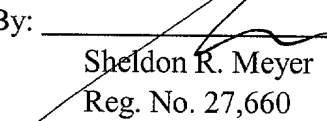
63. (New) A method according to Claim 60, wherein the cleaning device is bell shaped.

REMARKS

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: August 8, 2001

By: 
Sheldon R. Meyer
Reg. No. 27,660

FLIESLER DUBB MEYER & LOVEJOY LLP
Four Embarcadero Center, Fourth Floor
San Francisco, California 94111-4156
Telephone: (415) 362-3800